



**Trinity College Dublin**

Coláiste na Tríonóide, Baile Átha Cliath

The University of Dublin

School of Computer Science and Statistics and Trinity Business School

# BA (Mod) Computer Science and Business Handbook 2020–2021



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## **Welcome**

The B.A. Moderatorship in Computer Science and Business is a four year joint honours degree course run by the School of Computer Science (SCSS) and Statistics and the Trinity Business School.

This handbook contains information and regulations for all BA (Mod) Computer Science and Business students.

It provides a guide to what is expected of you on this programme. It should be read in conjunction with the SCSS undergraduate handbook, which covers information common to all undergraduates on SCSS programmes.

We are confident that you will find the Computer Science and Business programme challenging and demanding and we hope that you will find your studies at Trinity College Dublin both stimulating and rewarding. Our programme has several features which we believe will contribute to your studies being an effective and enjoyable period of personal and academic development.

If you are a new student to university, it is strongly recommended that you meet your tutor as he or she is your advocate in College and can also provide you with support should you have any difficulties.

We wish you every success in the coming year.

Lucy Hederman & Mairead Brady  
(Course Directors)

## **Notes**

Information provided in this handbook is believed to be accurate at the time of preparation. Please note that, in the event of any conflict or inconsistency between the General Regulations published in the University Calendar and information contained in course handbooks, the provisions of the General Regulations will prevail. The University Calendar is available at <http://www.tcd.ie/calendar/>.

This handbook is available from the School of Computer Science and Statistics website. The handbook is subject to change.

# 1 Contacts, Year Structure

## 1.1 Contact Details:

### Computer Science and Business Directors:

Professor Lucy Hederman

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**Phone:** 8692245

**E-mail:** [hederman@tcd.ie](mailto:hederman@tcd.ie)

Professor Mairead Brady

**Office:** Room 312 - Trinity Business School

**Phone:** 8962705

**e-mail:** [Mairead.Brady@tcd.ie](mailto:Mairead.Brady@tcd.ie)

### Course Administrator:

Sarah-Jade Evenden

**Office:** Teaching Unit, 1<sup>st</sup> floor of the O'Reilly Institute (ORI)

**Phone:** 8963692

**E-mail:** [evendens@tcd.ie](mailto:evendens@tcd.ie)

### The School of Computer Science Reception

The School reception office is beside Room G.8 in the O'Reilly Institute (ORI).

**Opening hours:** During lecture terms:

9:15am-11:00am,

11:30am-1:00pm and

2:00pm-4:30pm.

**Tel:** (01) 896 1765,

**E-mail:** [enquiries@scss.tcd.ie](mailto:enquiries@scss.tcd.ie),

**Web:** <http://www.scss.tcd.ie/>

**Address:** School of Computer Science and Statistics,  
O'Reilly Institute,  
Trinity College  
Dublin,  
Ireland.

## 1.2 Semester Dates

The key dates of the Academic Year are specified by the College at <https://www.tcd.ie/calendar/>. All students must attend College during all Teaching and Learning weeks and during all Assessment weeks. It should be noted that examinations may be held on Saturdays of assessment weeks, and may also be scheduled during Trinity week and might even be scheduled towards the end of the Revision weeks.

Teaching is conducted in two academic semesters (or terms) with a total of twenty-four weeks. The following table lists the duration of each term and the start and end dates for teaching in each term for the 2020-21 academic year. No lectures are held during the study weeks in each term.

Term	Duration	Start and End Dates (2020-2021)
Michaelmas Term (MT)	12 weeks followed by Revision week then Assessment week	28 <sup>th</sup> September 2020 – 20 <sup>th</sup> December 2020 <i>Study Week w/c 9<sup>th</sup> November 2020</i> <i>Revision Week w/c 4<sup>th</sup> January 2021</i> <i>Assessment Week w/c 11<sup>th</sup> January 2021</i>
Hilary Term (HT)	12 weeks followed by Revision week then Assessment week	18 <sup>th</sup> January 2021 – 25 <sup>th</sup> April 2021 <i>Study Week w/c 15<sup>th</sup> March 2021</i> <i>Revision Week w/c 3<sup>rd</sup> May 2021</i> <i>Assessment Week w/c 10<sup>th</sup> May 2021</i>

***Note the above timetable can be subject to change.***

***It is the student's responsibility to determine dates, times and locations of examinations.***



## ACADEMIC YEAR CALENDAR 2020/21

Academic Calendar Week	Week beginning	2020/21 Academic Year Calendar		Term / Semester
		UG continuing years / PG all years	UG new first years	
1	31-Aug-20	Marking/Results		←Michaelmas Term begins/Semester 1 begins
2	07-Sep-20			
3	14-Sep-20			
4	21-Sep-20	Orientation (UG Visiting/Erasmus & PG)		
5	28-Sep-20	Teaching and Learning	Orientation (UG new first years)	←Michaelmas teaching term begins
6	05-Oct-20	Teaching and Learning	Teaching and Learning	
7	12-Oct-20	Teaching and Learning	Teaching and Learning	
8	19-Oct-20	Teaching and Learning	Teaching and Learning	
9	26-Oct-20	Teaching and Learning (Mon, Public Holiday)	Teaching and Learning (Mon, Public Hol)	
10	02-Nov-20	Teaching and Learning	Teaching and Learning	
11	09-Nov-20	Study/Review	Teaching and Learning	
12	16-Nov-20	Teaching and Learning	Teaching and Learning	
13	23-Nov-20	Teaching and Learning	Teaching and Learning	
14	30-Nov-20	Teaching and Learning	Teaching and Learning	
15	07-Dec-20	Teaching and Learning	Teaching and Learning	
16	14-Dec-20	Teaching and Learning	Teaching and Learning	←Michaelmas term ends Sunday 20 December 2020/Semester 1 ends
17	21-Dec-20	Christmas Period - College closed		
18	28-Dec-20	24 December 2020 to 3 January 2021 inclusive		
19	04-Jan-21	Revision	Revision	
20	11-Jan-21	Assessment*	Assessment*	←Hilary Term begins
21	18-Jan-21	Assessment*/ Foundation Scholarship^	Assessment*	
22	25-Jan-21	Marking/Results	Marking/Results	
23	01-Feb-21	Teaching and Learning	Teaching and Learning	←Hilary teaching term begins /Semester 2 begins
24	08-Feb-21	Teaching and Learning	Teaching and Learning	
25	15-Feb-21	Teaching and Learning	Teaching and Learning	
26	22-Feb-21	Teaching and Learning	Teaching and Learning	
27	01-Mar-21	Teaching and Learning	Teaching and Learning	
28	08-Mar-21	Teaching and Learning	Teaching and Learning	
29	15-Mar-21	Study/Review (Wed, Public Holiday)	Study/Review (Wed, Public Holiday)	
30	22-Mar-21	Teaching and Learning	Teaching and Learning	←Hilary Term ends Sunday 25 April 2021
31	29-Mar-21	Teaching and Learning (Fri, Good Friday)	Teaching and Learning (Fri, Good Friday)	
32	05-Apr-21	Teaching and Learning (Mon, Easter Monday)	Teaching and Learning (Mon, Easter Monday)	
33	12-Apr-21	Teaching and Learning	Teaching and Learning	
34	19-Apr-21	Teaching and Learning	Teaching and Learning	
35	26-Apr-21	Trinity Week (Mon, Trinity Monday)	Trinity Week (Mon, Trinity Monday)	←Trinity Term begins
36	03-May-21	Revision (Mon, Public Holiday)	Revision (Mon, Public Holiday)	
37	10-May-21	Assessment*	Assessment*	←Statutory (Trinity) Term ends Sunday 6 June 2021/Semester 2 ends
38	17-May-21	Assessment*	Assessment*	
39	24-May-21	Marking/Results	Marking/Results	
40	31-May-21	Marking/Results	Marking/Results	
41	07-Jun-21	Research (Mon, Public Holiday)	Research (Mon, Public Holiday)	
42	14-Jun-21	Research	Research	
43	21-Jun-21	Research	Research	
44	28-Jun-21	Research	Research	
45	05-Jul-21	Research	Research	
46	12-Jul-21	Research	Research	
47	19-Jul-21	Research	Research	
48	26-Jul-21	Research	Research	
49	02-Aug-21	Research (Mon, Public Holiday)	Research (Mon, Public Holiday)	
50	09-Aug-21	Research	Research	
51	16-Aug-21	Research	Research	
52	23-Aug-21	Research	Research	
* Note: additional/contingency days may be required outside of the formal assessment/reassessment weeks.				
^ Note: It may be necessary to hold some exams in the preceding week.				

## **2 General Programme Information**

The computer Science and Business programme is a four-year course leading to an honors degree.

### **2.1 About the School of Computer Science and Statistics**

The School of Computer Science and Statistics originated from the Department of Computer Science and the Department of Statistics and forms part of the Faculty of Engineering, Mathematics and Science. The Department of Computer Science was founded in 1969 and the BA Moderatorship in Computer Science had its first intake of students in 1979.

The School currently runs four full-time undergraduate degree programme with over 900 undergraduate students. The School also offers a range of postgraduate courses, with over 300 students. In addition, over 150 postgraduate students are studying for research degrees in the School.

The School is a vibrant centre of research. The School, with Electrical Engineering, leads the Centre for Telecommunications Value-Chain Research (CTVR), a Science Foundation Ireland (SFI) Centre for Science, Engineering and Technology (CSET). It is also a major partner in three other important CSETs: LERO (the Irish Software Engineering Research Centre); Smart and Sustainable Cities; and ADAPT.

The School of Computer Science and Statistics consists of five disciplines:

- Software and Systems
- Artificial Intelligence
- Networks and Distributed Systems
- Graphics and Vision
- Statistics and Information System

There are two Research Centres: the Centre for Research in Information Technology in Education and the Centre for Health Informatics.

### **2.2 About the Trinity Business School**

The Trinity Business School unveiled its new 80 million euro building on Trinity's historic campus in June 2019. The School was founded in 1925 and has had an innovative role in management education and research, which both serves and influences industry, government and public policy.

The Trinity Business School enjoys a strong international profile and maintains excellent relationships with Irish and global organisations in the private, public and voluntary sectors. The Trinity Business School is ranked 1<sup>st</sup> in Ireland and 15<sup>th</sup> in Western Europe (Eduniversal Deans' Ranking 2018) and has accreditations from AMBA and EQUIS. The School's mission is to educate the

most able undergraduates, postgraduates, doctoral candidates and experienced managers, providing each with the best disciplinary competence in management as well as a critical and inquiring understanding of organisations. Our students, faculty, staff and alumni comprise one of the finest business school communities in Europe.

**Undergraduate:** The School's suite of undergraduate programmes are characterised by unique curricula. The B.B.S. degree allows undergraduates to specialise in Business, while the B.A. Moderatorship in Economic and Social Studies (BESS) enables undergraduates to combine Business with Economics, Political Science or Sociology to honors level. The Business Studies and a Language degree combine business studies with French, German, Spanish, Polish or Russian. The Law and Business and, Computer Science and Business are two of the most popular degrees.

**Research:** The Trinity Business School has a globally recognised track record in all areas of Business research, most particularly international business, public service management, entrepreneurship and finance. The Business School fosters individual research and scholarship by all members of staff and has over 50 PhD students. Research in Trinity Business School is both a collective and individual endeavour. The basic element of research is the inquisitive individual mind seeking answer to managerially relevant questions undertaken local, nationally and internationally.

**Master Programmes:** Trinity Business School's has a suite of master programmes including MSc in Finance, Management, International Business, Digital Marketing, HRM etc. Many of these are ranked among the best in the World. For example the MSc in marketing is ranked 1<sup>st</sup> in Ireland, 11<sup>th</sup> in Europe and 14<sup>th</sup> in the World (QS 2019). The Executive MBA is ranked 1<sup>st</sup> in Ireland, 12<sup>th</sup> in Europe and 44<sup>th</sup> in the world by the Economist, 2018.

## 2.3 Key Locations

The SCSS is headquartered in the O'Reilly Institute as are some of the laboratories and small meeting rooms. Most of the computer science related lectures/tutorials take place in the Hamilton building, the Lloyd building or in Goldsmith Hall. The Trinity Business School is headquartered in the Trinity Business School building with most of the business modules taking place there but also in the Arts Building and the Museum building. For both subject areas, lectures, laboratory classes, and examinations can be scheduled anywhere within or even external (RDS etc) to the University. A searchable online campus map is provided at <https://www.tcd.ie/Maps/assets/pdf/tcd-campus.pdf>

The Academic Registry (see <https://www.tcd.ie/academicregistry/about/>) provides central academic administrative services in support of Undergraduate and Postgraduate Admissions, Fees & Payments, Annual Student Registration, Lecture Timetables, Erasmus & Study Abroad, Examinations, Assessment & Progression and Commencements & Graduation.

## 2.4 Study Abroad

Opportunities exist under the College-wide exchange programme for Computer Science and Business students to study abroad for their Junior Sophister year. Students may study in North



America, Asia or Australia. Previous students have studied in Toronto, Ningbo (China), Hong Kong and Sydney. The qualifying criteria for the exchanges is a minimum of II.1 in the Junior Fresh year. For further information or assistance students should contact Jimmy White, Academic Exchange Coordinator, Trinity Business School email: [Business.exchange@tcd.ie](mailto:Business.exchange@tcd.ie)

Further information is available at <https://scss.tcd.ie/international/>

### 3 Teaching and Learning

This part of the Handbook sets out the regulations that apply to the BA (Mod) in Computer Science and Business for the 2020/2021 academic year.

The **College Calendar**, which is published annually at the beginning of each academic year, contains the following additional regulations:

- **General Regulations** that apply to all degree programmes in the University;
- **General Faculty Regulations** that apply to courses within the Faculty of Engineering, Mathematics and Science; and the Faculty of Arts, Humanities and Social Sciences
- Regulations that apply specifically to the **Moderatorship in Computer Science and Business**

If any discrepancy exists between the regulations in this document and the College Calendar, the College Calendar takes precedence, which is available online at <https://www.tcd.ie/calendar/undergraduate-studies/>

You are expected to be aware of the various regulations; ignorance is not a valid reason for failure to comply.

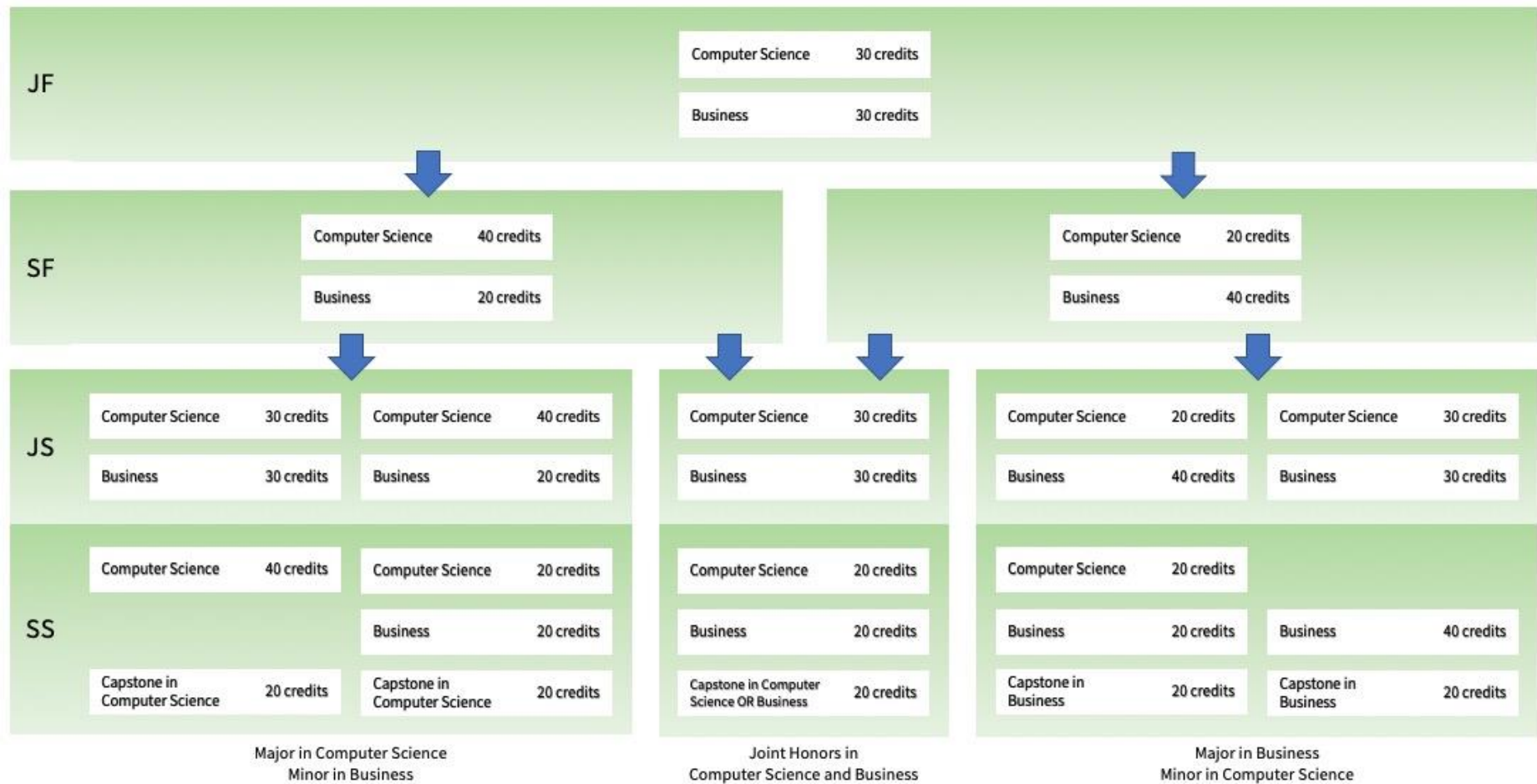
#### 3.1 Programme Architecture

Students typically enter Year 1 from secondary school via the Central Applications Office (CAO) system or other formal Trinity processes – direct entry, international students and advanced entry students – See <https://www.tcd.ie/study/apply/making-an-application/undergraduate/>

Students who entered the programme before 2019 will normally exit the programme at the end of Year 4, with a B.A. (Mod.) in Computer Science and Business, though provision is made for students to exit the programme with an ordinary B.A. degree at the end of Year 3.

From 2019 entry, CSB is a Joint Honors programme under the new Trinity Education Project (TEP). The diagram on the following page illustrates the possible pathways through this programme. First year students will divide their time between mandatory Business and Computer Science modules. In second year, students will choose to do either more Business or more Computer Science. Depending on their choices in later years, students will exit with one of the following awards: Joint Honors in Computer Science and Business; Major in Computer Science / Minor in Business; Major in Business / Minor in Computer Science. Available pathways are subject to change and may depend on capacity.

The terms *Junior Fresh*, *Senior Fresh*, *Junior Sophister* and *Senior Sophister* are widely used in Trinity to refer to a first-year, second-year, third-year and fourth-year students respectively; thus, for example, Junior Fresh year (or JF year) refers to Year 1. The teaching year is divided into two twelve-week semesters. The first semester (running roughly September to December) is known as Michaelmas Term (MT), the second (running roughly January to April) is known as Hilary Term.



## 3.2 New Programme Structure

In each academic year students must complete 60 ECTS of modules. Under the new CSB programme structure all first year modules are mandatory. Thereafter, students choose their path through the structure shown on page 12.

Brief descriptions of the programme modules are provided on the relevant year page of the course website <https://teaching.scss.tcd.ie/joint-honors-computer-science/>. Full details, including learning outcomes, book recommendations and important evaluation and assessment criteria are available at <http://my.tcd.ie>.

Where there are optional elements students select their options online by a deadline and every effort is made to provide students with their choices though that is not always possible.

### 3.2.1 Year 1 – Junior Fresh - 2019 onwards

In year 1 (Junior Fresh) CSB students take the following mandatory modules:

Michaelmas Term	Hilary Term
Computer Science	
Mathematics I - CSU11001 (5 ECTS)	Programming Project – CSU11013 (5 ECTS)
Introduction to Programming – CSU11010 (10 ECTS)	
Introduction to Computing I – CSU11021 (5 ECTS)	Introduction to Computing II – CSU11022 (5 ECTS)
Business	
Fundamentals of Management and Organisation – BUU11510 (10 ECTS)	
Introduction to Economic Policy – ECU11030 (10 ECTS)	
Quantitative Methods for Business – BUU11530 (10 ECTS)	

### 3.2.2 Year 2 – Senior Fresh – 2020 onwards

In second year under the new two-subject programme architecture, students will take modules worth 40 ECTS in one subject, and worth 20 ECTS in the other. All modules are subject to change. Business modules maybe designated as mandatory/optional. Students must ensure that they have a balance of 30 ECTS credits for each semester.

Michaelmas Term	Hilary Term
Mandatory CS Modules (20 ECTS)	
Algorithms and Data Structures I – CSU22011 (5 ECTS)	Mathematics II – CSU11002 (5 ECTS)
Information Management I – CSU22041 (5 ECTS)	Software Engineering Group Project I – CSU22013 (5 ECTS)
Modules for those taking 40 ECTS of Computer Science	
Applied Statistics and Probability I – STU22004 (5 ECTS)	Algorithms and Data Structures II – CSU22012 (5 ECTS)
Elective CS module	Elective CS module
Elective Computer Science Modules	
Systems Programming – CSU22014 (5 ECTS)	Concurrent Systems and Operating Systems -CSU22015 (5 ECTS)
Intermediate Programming – CSU22061 (5 ECTS)	Natural Language Processing – CSU22062 (5 ECTS)
Business Modules (choose 20 ECTS or 40 ECTS)	
Organisational Behaviour – BUU22510 (5 ECTS)	Principles of Marketing – BUU22520 (5 ECTS)
Introduction to Accounting – BUU22530 (5 ECTS)	Introduction to Finance – BUU22550 (5 ECTS)
Creative Thinking, Innovation and Entrepreneurial Action - BUU22570 (5 ECTS)	Introduction to Operations Management – BUU22560 (5 ECTS)
Managing Climate Change – BUU22592 (5 ECTS)	Qualitative Research Methods – BUU22593 (5 ECTS)

### 3.2.3 Year 3 – Junior Sophister – 2021 onwards

Under the new programme structure, in third year, the balance between CS and Business depends on the path taken in second year, and the desired exit option. See diagram on page 18.

All modules are subject to change. Business modules maybe designated as mandatory/optional. Students must ensure that they have a balance of 30 ECTS credits for each semester.

Michaelmas Term	Hilary Term
Mandatory Computer Science Modules	
Software Engineering – CSU33012 (5 ECTS)	Software Engineering Group Project II - CSU33013 (5 ECTS)
Data Structures and Algorithms – CSU33D03 (5 ECTS)	Information Management II – CSU34041 (5 ECTS)
Computer Science Electives	
Symbolic Programming – CSU34011 (5 ECTS)	Artificial Intelligence – CSU33061 (5 ECTS)
Functional Programming – CSU34016 (5 ECTS)	Advanced Computer Networks – Module code to follow (5 ECTS)
Discrete Mathematics I – MAU22C01 (5 ECTS)	Discrete Mathematics II – MAU22C02 (5 ECTS)
	Compiler Design – CSU33071 (5 ECTS)
Business Modules (some of which may be mandatory)	
Management Accounting for Business Decisions – BUU33521 (5 ECTS)	
Financial Accounting I – BUU33531 (5 ECTS)	Financial Accounting II – BUU33532 (5 ECTS)
Business in Society – BUU33590 (5 ECTS)	Innovation, Entrepreneurship and Business Modelling – BUU33600 (5 ECTS)
Introduction to Fixed Income Securities and Alternative – BUU33620 (5 ECTS)	Corporate Finance and Equity Valuation – BUU33630 (5 ECTS)



Services Management – Module code to follow (5 ECTS)	Digital Technology in Operations– Module code to follow (5 ECTS)
Investments – BUU33680 (5 ECTS)	Organisation Theory and Organisational Analysis - BUU33660 (5 ECTS)
Contemporary Marketing Management – BUU33700 (5 ECTS)	Social Entrepreneurship - BUU33690 (5 ECTS)
Taxation 1 – BUU33720 (5 ECTS)	Consumer Behaviour – BUU33710 – (5 ECTS)
Financial Management – BUU33740 (5 ECTS)	Taxation 2 – BUU33730 ( 5 ECTS)

### 3.2.4 Year 4 – Senior Sophister – 2022 onwards

In year 4, all students must complete a capstone project, either in Computer Science or Business, worth 20 ECTS. The remaining 40 ECTS is made up of modules from the following options. The balance between subjects depends on the path taken in previous years, and the desired exit option. See diagram on page 18.

All modules are subject to change. Business modules may be designated as mandatory/optional. Students must ensure that they have a balance of 30 ECTS credits for each semester.

Michaelmas Term	Hilary Term
Mandatory Module (20 ECTS)	
CS Capstone or Business Capstone Project – CSU44099 <sup>1</sup>	
)Computer Science Electives	
Strategic Information Systems – STU45006 (10 ECTS)	
Human Factors – CSU44051	Group Project – CSU44098 (10 ECTS)
Fuzzy Logic – CSU44001	
Formal Verification – CSU44003	Other CS electives to be confirmed
Topics in Functional Programming - CSU44012	
Internet Applications – CSU44000	
Computer Graphics – CSU44052	
Computer Vision – CSU44053	
Machine Learning – CSU44061	
Technology Entrepreneurship – CSU44081	
Business Modules (some of which may be mandatory)	
Managing People and Leading Change - BUU44560 (10 ECTS)	
Strategic Management Theory and Practice – BUU44501 (10 ECTS)	
International Business & the Global Economy – BUU44510 (10 ECTS)	
Financial Reporting & Analysis – BUU44530 (10 ECTS)	
Advances in Marketing Theory and Practice – BUU44550 (10 ECTS)	
Managing New Product Development – BUU44580 (5 ECTS)	Derivatives – BUU44650 (5 ECTS)
Designing Social Innovation – BUU44621 (5 ECTS)	Delivering Social Impact - BUU44622 (5 ECTS)

<sup>1</sup> For more information about final year projects, please visit <https://projects.scss.tcd.ie/>

International Finance – BUU44640 (5 ECTS)	Company and Business Law – BUU44660 (5 ECTS)
Audit and Assurance – BUU44670 (5 ECTS)	

### 3.3 Old programme structure – from 2018 or earlier.

#### 3.3.1 Year 3 – Junior Sophister (till 2020-21 only)

In year, 3 (Junior Sophister) students take a combination of subjects, of which 20 ECTS credits must be from business, 20 ECTS credits must be from computer science and the remaining 20 ECTS credits can be from either. Furthermore, students must ensure that they have a balance of 30 ECTS credits for each semester. More information regarding modules can be found [here](#)!

Business Module Options	
BUU33520	Management Accounting for Business Decisions [10 ECTS]
BUU33530	Financial and Management Accounting [10 ECTS]
BUU33590	Business in Society
BUU33620	Introduction to Fixed Income Securities and Alternative Investments
BUU33640	Services Management
BUU33680	Investments
BUU33700	Contemporary Marketing Management
BUU33720	Taxation 1
BUU33740	Financial Management
BUU33690	Social Entrepreneurship
BUU33631	Corporate Finance and Equity Valuation
BUU33601	Innovation, Entrepreneurship and Business Modelling
BUU33710	Consumer Behaviour
BUU33660	Organisation Theory and Organisational Analysis
BUU33650	Digital Technology in Operations
BUU33730	Taxation 2
Computer Science Module Options	
CSU23031	Telecommunications II
CSU34011	Symbolic Programming
CSU33012	Software Engineering
CSU33013	Software Engineering Group Project
CSU43016	Introduction to Functional Programming
CSU34041	Information Management II
CSU33061	Artificial Intelligence I
CSU33071	Compiler Design I
CSU33081	Computational Mathematics
CSU33BC1	e-Business I
STU33005	Information Systems
STU33009	Statistical Methods for Computer Science

### 3.3.2 Year 4 – Senior Sophister (till 2021-2022 only)

In year 4 (Senior Sophister), students must take 60 ECTS credits in total with at least 20 ECTS in Business and 20 ECTS in Computer Science. The Computer Science Final Year Project (CSU44099) is 20 ECTS and is mandatory. Furthermore, students must ensure that they have a balance of 30 ECTS credits for each semester.

Computer Science and Business Module choice form must be completed with supporting presentations held during the latter half of the Hilary Term for Year 3 students. Students select their options online by the deadline. Every effort is made to provide students with their choices though that is not always possible.

The Year 4 Computer Science and Business options, each of which count for 5 ECTS credits unless stated otherwise, are as follows. Please note that not all options may run in a given year.

#### Computer Science Options

CSU44099	Final Year Project (20 ECTS) <sup>2</sup>
CSU44098	Group Design Project (10 ECTS)
STU45006	Strategic Information Systems (10 ECTS)
CSU44000	Internet Applications
CSU44001	Fuzzy Logic & Control Systems
CSU44004	Formal Verification
CSU44012	Topics in Functional Programming
CSU44051	Human Factors
CSU44052	Computer Graphics
CSU44053	Computer Vision
CSU44061	Machine Learning
CSU44081	Technology Entrepreneurship
CSU34031	Advanced Telecommunications

#### Business Options

BUU44560	Managing People & Leading Change (10 ECTS)
BUU44501	Strategic Management Theory and Practice (10 ECTS)
BUU44510	International Business & Global Economy (10 ECTS)
BUU45530	Final Reporting & Analysis (10 ECTS)
BUU44550	Advances in Marketing Theory & Practice (10 ECTS)
BUU44680	Global Supply Chain Management (10 ECTS)
BUU44620	Social Innovation & Social Impact (10 ECTS)
BUU44670	Audit & Assurance
BUU44640	International Finance
BUU44650	Derivatives
BUU44660	Company & Business Law
TBC	Operations Strategy & Improvement (5 ECTS)

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<sup>2</sup> for more info please visit <https://projects.scss.tcd.ie/>

### 3.4 Marking Scale

Grades for individual modules and overall grades are awarded based on the (rounded) percentage achieved as follows:

First Class Honors	I	70% and above
Second Class Honors, Upper Division	II.1	60-69%
Second Class Honors, Lower Division	II.2	50-59%
Third Class Honors	III	40-49%

### 3.5 Coursework Requirements

Coursework is an integral part of Computer Science and Business and it is essential that every student participate fully in the coursework associated with each module. If a student does not make a serious attempt at the coursework in a module this is considered in the same way as if a student does not make a serious attempt at an examination. Any student who submits less than two thirds of their coursework in a module is considered as not making a serious attempt. In such circumstances, if the student fails the module overall, they may be excluded from the degree programme at the discretion of the Examination Board.

Timely submission of coursework is particularly important, as this is a vital professional skill. The penalties for late submission of coursework may be specified by the individual module lecturers.

If there are extenuating circumstances warranting late submission students must request extensions through their tutors in advance of the deadline for submission. Extenuating circumstances include only serious circumstances such as certified medical conditions.

Coursework marks are normally computed and returned as numerical values (e.g. as percentages). Guidelines for the presentation and submission of work are provided separately for each module.

It is the responsibility of each student to retain a copy of any coursework that they submit.

### 3.6 Module Grades

The mark awarded to a student for each module is generally a combination of an individual (exam) mark and a coursework mark. The method, which is used to combine both marks into the overall mark, is at the discretion of the module lecturer. To pass some modules students may be required to pass both components independently. Students should make themselves aware of the rules governing assessment at the beginning of each module.

### 3.7 Overall Grade

Students who pass their requirements are awarded an overall honors grade for the year based on the overall credit weighted.

### **3.8 Progression Regulations**

Normally semester modules are examined during and/or at the end of the semester and full-year modules are examined during and/or at the end of the second semester. Where reassessment is by supplemental examination these are normally held in the week(s) before Fresher's Week.

To complete an academic year (and hence progress to the next year of the programme or exit with a degree award), students must be successful at the first sitting of modules or at reassessment stage.

In order to be successful in a given year students must pass all modules. The pass mark is 40%. Alternatively, students may pass by compensation if they (i) achieve an overall weighted average pass mark and (ii) pass modules totaling 50 credits, and (iii) get a 'Qualified Pass' mark (35%) in the failed module(s) (either one 10-credit module or one/two 5-credit modules).

If a student is successful at the first sitting his/her overall mark will be calculated as the average of each module's mark weighted by its ECTS rating and an overall grade awarded.

If a student is unsuccessful at the first sitting, they are required to present for reassessment (by supplemental examination and/or supplementary coursework) in all modules in which they have not achieved a pass mark. Permission to take supplemental examinations will not normally be granted to students whom the court of examiners considers not to have made a serious attempt at the annual examinations unless an adequate explanation is furnished. The method of assessment of modules may vary between first sitting and reassessment.

The same progression and compensation regulations as outlined above apply at the reassessment session. The overall credit-weighted average for the academic year will be calculated using the most recent marks achieved.

A student who does not pass the year is required to repeat the year in full.

### **3.9 Module Assessment**

The form of assessment for semester, annual and supplemental examination stages varies between modules and may include a combination of coursework, written examination or other forms of assessment. The method of assessment and criteria for passing each module is set out in the module descriptor, which may be found on the student information system (<http://my.tcd.ie>)

### **3.10 Viewing Examination Scripts and Appealing Results**

Once the results are published students can discuss their examination/assessment performance with the examiners. The topic of such discussions is confined to the student's performance in the examination. They are not an opportunity to negotiate an increase of marks. Lecturers cannot independently change any marks once they have been approved by the Court of Examiners.

Students are entitled to view their script when discussing their examination or assessment.

Students may ask that their results be reconsidered if they have reason to believe:



1. The grade is incorrect because of an error in calculation of results,
2. The examination paper contained questions on subjects which were not part of the course prescribed for the examination, or
3. Bias was shown by the examiner in marking the script.

They should contact their tutor to discuss the situation.

### **3.11 Repeating a Year**

When a student must repeat a year, they must do so in full (i.e. repeating all modules and all assessment elements of those modules). Students may repeat years 1-4 of the programme but may only repeat a particular year once and may only repeat two years within the programme.

In exceptional circumstances some students are permitted to repeat off-books (taking only examinations in the subjects which they failed). This is applied for through the tutor.

### **3.12 Awards**

#### **3.12.1 Ordinary BA Degree (exit only)**

Students who have passed their Year 3 examinations may have an ordinary BA degree conferred if they do not choose, or are not allowed, to proceed to Year 4 of the programme, or if they fail to complete satisfactorily Year 4 of the course. Except by permission of the University Council, on the recommendation of the Executive Committee of the School of Computer Science and Statistics, an ordinary BA degree may be conferred only on candidates who have spent at least two years in the University.

#### **3.12.2 Students entering from 2019-20 onwards**

The BA (Moderatorship) degree result is awarded, if a student has successfully completed Years 3 and 4, based on a combined mark from Year 3 (which counts for 30% of the moderatorship result) and Year 4 (which counts for 70% of the moderatorship result).

Depending upon student choices made within their programme of study it is possible to confer with a Bachelor in Arts (Moderatorship) award in one of the following categories:

Joint honors in Computer Science and Business

Major in Computer Science with minor in Business

Major in Business with minor in Computer Science

#### **3.12.3 Students entering before 2019-20**

The BA (Moderatorship) degree result is awarded, if a student has successfully completed Years 3 and 4, based on a credit-weighted average of the overall results achieved in Year 4.

Students who are required to repeat one or more years, or go off-books for one or more years, may have their moderatorship results calculated as a weighted average of their overall results achieved in third year (contributing 30 per cent) and fourth year (contributing 70 per cent).

### 3.13 External Examiner

The external examiner for the programme is Professor Simon Dobson from the University of St Andrews, Scotland. He will be involved in ensuring that the examinations in third and fourth year are run properly (in terms of how the exam papers are set and marked, and how the results are moderated).

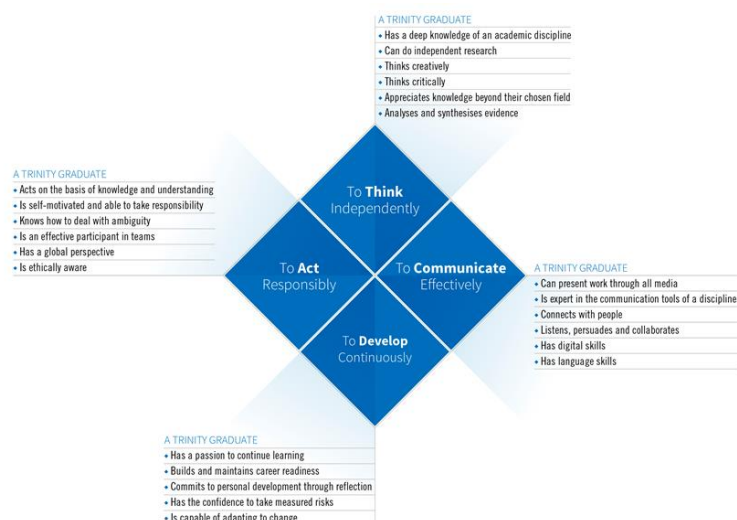
### 3.14 Programme Learning Outcomes

For BA (Mod) in Computer Science and Business graduates the learning outcomes are:

1. Advanced knowledge and understanding of computer science and business;
2. The ability to identify, formulate, analyse and solve complex computer science and business problems;
3. The ability to perform the detailed design of a novel system, component process using the analysis and interpretation of relevant data:
4. The ability to design and conduct experiments and to apply a range of standard and specialised research (or equivalent) tools and techniques of enquiry;
5. An understanding of the need for high ethical standards in work and life;
6. The ability to work effectively as an individual, in teams and in multi-disciplinary settings together with the capacity to undertake lifelong learning;
7. The ability to communicate effectively on complex computer science and business activities

### 3.15 Graduate Attributes

Throughout their time at Trinity, our students will be provided with opportunities to develop and evidence achievement of a range of graduate attributes that support their academic growth. Graduate attributes can be achieved in academic and co-extra – curricular activities



### **3.16 Module Descriptors**

Links to module descriptors are provided on the course webpages (see <https://teaching.scss.tcd.ie/joint-honors-computer-science/> )

The schools reserves the right to amend the list of available modules and, in particular, to withdraw and add modules. Timetabling may restrict the availability of modules to individual students.

### **3.17 Attendance Requirements**

Students are required to attend all lectures, laboratory and tutorial sessions associated with their programme of study and to participate fully in the academic work of their class. Note that the use of laptops (and other devices) is at the lecturer's discretion in lectures, laboratory and tutorial sessions. Students must notify the lecturer concerned or their tutor as early as possible if they are unable to attend lectures, laboratories or tutorials or to submit coursework for any reason.

Students who are absent for medical reasons should notify their tutor and will usually be required to provide a medical certificate to their tutor.

### **3.18 Absence from Examinations**

Students must attend all examinations. An unexplained absence from any examination and/or not making a serious attempt at an examination results in an automatic exclusion from the degree programme.

### **3.19 Relevant University Regulations**

College regulations are set out in the University Calendar, which may be consulted in any College Library, the Enquiries Office, any academic or administrative office or online at <http://www.tcd.ie/calendar/>.

The relevant extracts of the Calendar, entitled General Regulations and Information and Faculty of Engineering, Mathematics and Science, are handed out at registration at the beginning of the year. You are expected to be aware of the various regulations for the BA (Mod) in Computer Science and Business. Ignorance of the regulations is not a valid reason for failure to comply.

## **4 Scholarships and Prizes**

In addition to prizes mentioned in the SCSS Undergraduate handbook, the following prize is specific to the CSB programme.

### **4.1 Kenneth Mulkearns Memorial Medal**

Irish Life Assurance plc founded a prize in 1992 in memory of Kenneth Mulkearns. A silver medal is awarded annually to the student who is placed first in the B.A. in Computer Science and Business degree examination.